Abstract

The invention relates to the use of Fused Deposition Modeling to construct three-dimensional (3D) bioresorbable scaffolds from bioresorbable polymers such as polycaprolactone (PCL), or from composites of bioresorbable polymers and ceramics, such as polycaprolactone/hydroxyapatite (PCL/HA). Incorporation of a bioresorbable ceramic to produce a hybrid/composite material support provides the desired degradation and resorption kinetics. Such a composite material improves the biocompatibility and hard tissue integration and allows for increased initial flash spread of serum proteins. The basic resorption products of the composite also avoids the formation of an unfavorable environment for hard tissue cells due to a decreased pH. The scaffolds have applications in tissue engineering, e.g., in tissue engineering bone and cartilage.